STAT

Sanitized Copy Approved for Release 2011/05/19 : CIA-RDP80-00809A000600120038-7

PERFECTING THE TECHNICAL EQUIPMENT OF INTERURBAN TELEPHONE COMMUNICATIONS

Vestnik Svyazi [Communications Herald], No 9, 1955, Moscow, Pages 18-20

N. N. Grebnev

(From the Experience of the Kazan Interurban Telephone Station)

The July Plenum of the Central Committee of the Communist Party of the Soviet Union projected the program for further upsurge of industry on the basis of the large-scale use in production of the achievements of science, technology, and advanced practice. In the decision adopted by the plenum special emphasis is placed upon the decisive role of technical progress in all branches of industry.

The tasks set by the plenum have vast importance also for the communications system. Practice shows that only by means of daily improvement of technology, discovery, and daring use of production potentials, installation of the new, advanced technology is it possible to achieve a fundamental improvement in the operation of means of communication, the growth of labor productivity, the raising of qualitative indexes and the overfulfillment of planned objectives.

Below we will tell about the operating experience of one of the foremost communication enterprises, the Kazan interurban telephone station. The personnel of this station (chief Z. S. Gaynutdinov, chief engineer P. B. Sukhanov) have repeatedly come out victors in the All-Union Socialist Competition of Communications Workers. In particular, the group won second prize in the results of the competition for the first and second quarters of 1955. The personnel of the Kazan interurban telephone station owes its production achievements in no small degree to the fact that unflagging attention is here paid to questions of technology; it is boldly utilized, various technical improvements are being put into practice, and the general cultural level of labor is being raised.

The appeal of the participants of the All-Union Meeting of the Workers of Industry to all men and women workers, engineering and technical personnel, and office workers of the industry of the Soviet Union found a very lively response among the personnel of the Kazan interurban telephone station. After having weighed and discussed their production possibilities, the station managers and the leading engineering and technical personnel outlined a number of concrete measures for the improvement of enterprise operation. Some of these measures have already been put into practice.

In this manner the enterprise accomplished the shift to a combined operating system of the outgoing communications of the Moscow, Chistopol, Zelenodol'skiy, Arskiy, and several other directions that have more than 2 channels. In daytime, in the hours of heavy traffic, these communications are serviced by the order system, while in the evening, night, and morning hours the instant service system is employed.

The preliminary completion of rather substantial erection jobs was required to put into practice the given measure which has substantially improved the quality of service to subscribers. The point is that the interurban switchboards of the Kazan interurban telephone station did not have a multiple for connecting interurban communications, without which operation of communications by the instant service system is not possible. It was therefore necessary to find other means. The station workers

STAT

reconditioned a large number of frames for a multiple which were then mounted in the interurban switchboards.

Into the mounted multiple were connected lines of 3 kinds: order, service and connective; the number of service lines corresponded to the number of interurban switchboards. The connection of these lines is shown schematically in Figure 1.

Service of the outgoing communications by the instant system of operation was organized as follows. When a call comes to the order desk along one of the order lines, the telephone operator at the desk, after querying the subscriber and learning that he wants to get a connection, for example with Moscow, asks him not to hang up the microtelephone. Then, after putting the plug into the socket of the proper service line, she calls the operating point at which outgoing communications to Moscow are connected and informs the operator of the interurban switchboard that from such and such an order line an order has come in for a talk with Moscow. In her turn the operator of the interurban switchboard connects up to the indicated order line, accepts the order from the subscriber, and at once completes the required connection.

The switching into the multiple of connective lines has also improved the system of transit. Since transit connections were formerly made only on the night switchboard which was highly inconvenient and slowed down the processing of transit orders.

After receiving an order for a transit talk, the telephone operator of the interurban switchboard calls the proper operating point on the service line, passes on the order to the telephone operator who replies, and after that both operators complete the transit connection, occupying for this purpose one of the free connective lines.

Simultaneously with preparation for the transition to the combined system of operating channels, work was also carried out here in adapting the existing equipment to service of communications at night by what is called the group system. The introduction of the group system of service also had a big production effect since a proportional load on telephone operators was secured.

Substantial work was done at the Kazan interurban station also in enlarging the number of channels, in particular, in those directions where their shortage was keenly felt in the hours of maximum traffic.

For example the circuit was packed that joins the capital of the Tatar ASSR with Chistopol, a large transit junction, through which is realized the communication of Kazan with several district centers. Used for this purpose was inoperative (taken out of service) equipment of a 12-channel system of one of the first types made, as developed by Soviet specialists back in the prewar years. This equipment was in advance subjected to capital repair and partial modernization. The entire work of repair and remodelling was accomplished by the engineering and technical personnel of the Kazan interurban station. In the process of this work many details of the equipment were replaced, including all tube panels, the key in the feed circuit was abolished, more stable driver generators were used, etc.

The installation of the remodelled equipment in Kazan and Chistopol, the equipping of an intermediate amplifier point at Laishev, the tuning and training of high frequency channels -- all this the Kazan interurban station also did with its own manpower.

The number of communications to Yelabug was also increased. Kazan formerly worked with this point only through one nonpacked steel circuit. Now the situation has been radically improved. At the request of the Kazan interurban station, the republic administration of communications replaced the steel wires with bimetallic conductors, after which the Kazan--Yelabug circuit was packed with the OSMT-35 equipment. The repair, installation of equipment at both terminal stations, and tuning of communications was again wholly done by workers of the Kazan interurban telephone station. In consequence of the work completed, Kazan now has at its disposal 4 channels to Yelabug, and the provincial district centers, connected in the interurban station of Yelabug, have gained an outlet to the mainline network.

The OSMT-35 equipment in the Kazan -- Yelabug communications has been modernized after the proposal of engineer S. P. Khern; owing to appropriate variation in tube operating duty, it was possible to use a filament battery for supply of bias voltage in the circuit of amplifiers and converters of frequency. This made it possible to remove and use for other needs the grid batteries at both terminal stations.

To increase the number of communications of Kazan with Agryzy an additional telephone line in 2 acting channels of low frequency was created without disrupting the work of 2 telegraph communications connected at the middle points of linear transformers. The gaining of the additional channels was accomplished according to the circuit, shown in Figure 2, with use of the filters DK-0.1. Calls along the additional line are sent with currents of voice frequency.

Utilization of internal reserves permitted expansion of the network of mainline and intrarepublic communications also in other directions. In particular, the district center of Vysokaya Gora situated not far from Kazan now has additional communications to Kazan, organized along a steel circuit by means of a VChR-50 set. The Kazan -- Arsk steel circuit was recently packed with OKS equipment. In the communication line Kazan -- Yoshkar -- Ola a zero combined channel has been created, operating in a range of frequencies that are within both edges of the spectrum of the OV-3 equipment; the tuning of this channel is being completed and in the near future it will be put into operation.

The need to connect the newly created channels in the above indicated and other directions required the enlargement of the mounted capacity of the switchboard equipment of the Kazan interurban station. This task the station, employing its own manpower, completed in the current year. The capacity of 12 operating places has now been increased from 3 communications to 4. This permitted not only connection into the station of additionally organized communications, but also some consolidation of the working time of the telephone operators who service the interurban switchboards.

The efforts of the personnel of the Kazan interurban telephone station directed toward most effective use of the technical means at hand and its daily improvement, are not limited only to the above measures. A number of other valuable technical improvements and innovations and organizational measures have also been carried out at this enterprise. We shall list some of them below.

For improvement of audibility during conversations on the intrarepublic communications all steel circuits, connected in the Kazan interurban station, are equipped with terminal amplifiers UNCh-32. These amplifiers are placed in four stands, set up in the cross of the station.

For the same purpose a number of additional amplifying points on the intrarepublic steel circuits were created on the initiative and by the personnel of the Kazan station.

Reconstruction has been carried out of the DGTS equipment installed in Kazan. Owing to this reconstruction, it became possible to conduct two consultations -- all-union and republic -- simultaneously.

Considerable work is being done at the Kazan interurban station also in the field of automation and mechanization of separate production processes. In particular a conveyor along which order forms are delivered to the switchboard hall has been installed between the switchboard hall and the central talking station. The girl in the talking station, by pressing a button sets this conveyor into operation; but it is stopped automatically when the order form is dropped into a special receiver set up in the switchboard hall.

At all talking stations the switching on of the lights which are inside the talking booths is also now done automatically: at the central talking station, when the telephone operator puts the plug into the socket of the line going to the booth, and at other talking stations when the microtelephone is taken from the jack of the telephone set installed in the booth.

For automatic switching on of the light when the microtelephone is lifted, the circuit (Figure 3) proposed by engineer M. P. Plotnikov and technican A. A. Kamaleyev is applied. When the microtelephone is lifted in the talking booth, the relay R operates with its contact it closes the circuit of the illuminating light L. But when the microtelephone is put on the jack of the telephone set, the passage of current through the winding of relay R discontinues; it releases the armature and breaks the circuit of the illuminating light.

For automatic counting of the number of cases of tardy response of telephone operators at the order desk to calls coming in along the order lines, engineer M. P. Plotnikov has developed a special circuit which will in the near future be used in operating equipment. This circuit is shown in Figure 4. When relay R_1 of the order line operates in response to an incoming call, it closes with its contact the circuit of thermal relay TR. If during 15 seconds after this the telephone operator does not reply to the call and if consequently relay R_1 will hold the armature in an attracted position, then relay TR will operate. The contact of the latter closes the circuit of relay R_3 which also operates and in its turn closes the circuit of the counter Sch and the signal lamp SL (of the bell Zv, if the button Kn is pushed). Thus in addition to counting, the circuit affords the possibility directly to control the timeliness of the response of the order desk to the calls of subscribers and to take measures for the most rapid servicing of delayed calls.

Much attention is given at the station to the question of even distribution of the traffic through the operating places. Periodically -- not less than once in a quarter -- every communication passing through the exchange is analyzed and on the basis of this analysis a redistribution of communications to switchboards is carried out. With the object of equalizing the traffic at separate operating points, it is also a frequent practice to change over communications from one switchboard to another, which is done on an STS stand.

On the initiative of engineer V. V. Kigel', chief of LAZ, the sequence of preventive inspection of equipment has been somewhat changed

STAT

at the Kazan station. Formerly, according to instructions, the preventive work was accepted once a month; now the equipment, inspected by the technician by way of preventive maintenance, is accepted by the shift engineer immediately on completion of the preventive work. Experience shows that such an innovation considerably improves the quality of preventive maintenance and sharply reduces the number of technical failures.

The workers of the Kazan interurban telephone station give much practical aid to the communications enterprises of their zone, to booster stations and interurban telephone stations of district centers. This assistance is rendered first of all by means of regular trips to local places. Engineers, technicians, instructors in operation, going to this or that communication enterprise, instruct the local workers, helping them master new technology and also removing various technical and operational defects, teaching advanced methods and advising on complicated technical problems. All this has positive results. During the first half of the current year alone the station workers were at 30 district communication offices and at 16 booster stations. The personnel of the Kazan station is doing much to equip the peripheral stations with measuring devices and various gear. Now, for example, capital repair is being completed on an ISA-2 stand which will be passed on to the Yelabug interurban station.

The business-like daily contact with the periphery is not restricted merely to visiting the enterprises. Each of the shift managers of the switchboard hall of the Kazan interurban station is attached to a group of district communication offices. At the end of his shift duty the manager without fail phones the chiefs of the district offices "under his patronage" and talks to them, pointing to shortcomings in the work of the telephone operators of district centers observed during his shift, listening in turn to complaints about the Kazan station and outlining jointly with the office chiefs the measures necessary for the improvement of operations. On the results of such talks the shift manager reports in the morning report to the chief of the interurban station.

In addition to all this special seminars for telephone operators and technicians of the peripheral stations are periodically organized at the Kazan interurban station. In the current year for example a seminar was held at which telephone operators of 27 district centers raised their qualifications.

It is impossible not to say a few words also about the great importance attached to the culture of servicing clients at the Kazan interurban telephone station.

Take just the central talking station. This is a big, clean, bright room tastefully decorated and furnished. The booths feature all conveniences for the clients; they contain a small table with the telephone set and a fan and a chair. Just as the light, the fan is switched on by the telephone operator; if he wishes, the person speaking can turn it off by pressing a button.

The city's remaining talking stations are just as comfortably equipped. Their number is increasing year by year. During this year, for example, 4 new talking stations were opened.

The most diversified kinds of advertising are widely used with the object of attracting clients: special billboards on the main streets of the city, announcements in the list of subscribers of the city telephone

network, publicity in the newspaper Sovetskaya Tatariya [Soviet Tatary], information on the radio, special leaflets, neon signs on buildings in which the talking stations are located. Moreover the interurban telephone communications network is periodically advertised on the screens of motion picture theaters and also by means of a magnetophone and loud speaker on the wall of the interurban station building.

Among the measures which improve the service to clients is listed also the system introduced at the Kazan interurban station by which tags on talks that were not connected are passed on to the shift manager. The latter, on receiving such a tag, immediately undertakes all necessary measures so that the talk can be completed. If the talk did not take place because of damage to the circuit, he organizes a bypass connection. But if the subscriber called does not reply or has not yet arrived at the talking station, the shift manager recommends that the client transfer the order to the next period or authorize the interurban station which the subscriber called to speak for him.

As a result of the effort to perfect the technology and improve the quality of communications services to the population, the personnel of the Kazan interurban telephone station systematically overfulfilled the planned tasks and raised labor productivity. The income planned for the first quarter of the current year was attained by the station at 102.7% and for the second quarter at 103.1%. Fulfillment of the plan of exchanges amounted respectively to 100.7 and 102.5%. Labor productivity in the first and second quarters of 1955 was raised correspondingly by 7.7 and 9.9% in comparison with the same quarters of last year.

The results achieved will permit the personnel of the Kazan interurban station firmly to hold the title of advanced communications enterprise for a prolonged period of time.